

PATENT SPECIFICATION

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(54) A BOTTLE CAP OF SHRINKABLE PLASTICS MATERIAL

(71) We, METALLKAPSELFABRIK LOOS & CO. G.M.B.H., a German Body Corporate, of Weilburger Tal 1-5, Wiesbaden-Dotzheim, Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a bottle cap made from shrinkable plastics material which can be closely shrunk onto a bottle neck having a circumferential, outward projection. Such a projection may be an integral part of the bottle, as is common in wine bottles, or it may be part of a bottle closure, for instance a crown cork closure.

Various closures are known which seek to guarantee to the consumer among other things that the original contents of a bottle are untouched. For example, German Specification No. 1,482,594 discloses that the upper part of a cap may be formed with an inwardly directed corrugation which engages in a retaining groove in the bottle neck. However, this cap has the disadvantage that it does not offer a satisfactory safeguard against falsification of the contents, since the cap is not shrunk onto the bottle neck and therefore does not fit closely, so that it can be removed from the bottle neck without visible damage to the cap. A further disadvantage of such a cap is that by reason of the corrugation formed, the cap has to be made relatively thick which results in relatively high material cost.

Attempts have been made to construct a bottle cap having a row of perforations parallel to the cap axis and continuous as far as the bottom edge of the cap so as to facilitate removal of the remainder of the cap from the neck, see German Utility Model Specification No. 7,043,497. However, it has been found that this cap can tear open, during the shrinking-on process, at the beginning and end of the row of perforations.

It is known from German Utility Model Specification No. 7,043,497 to construct a tear-off strip extending circumferentially

around the top edge of the cap, defined by two perforated lines. These lines do not however tear open when the cap is pushed over a projection on the bottle neck, since the web between the perforations withstands the resultant elongation of the material in the longitudinal direction of the perforated lines.

An object of the invention is to provide a bottle cap which offers a better safeguard against falsification and can be used for commercially available types of closure and designs of bottle necks.

According to this invention, there is provided a bottle cap of shrinkable plastics material, for shrinking onto a bottle neck over a circumferential, outward projection (for example a projection portion of the neck or of a crown cork closure or of a screwed stopper), wherein the cap has one or more than one substantially axially extending row of perforations, the lower end of the or each row terminating at a distance above the lower edge of the cap and the upper end of the or each row terminating at a distance below the top of the cap, which distances are such that the cap can be shrunk onto the bottle neck without the cap splitting along the, or any, row of perforations, and the cap splits along at least one row when the shrunk-on cap is moved upwardly over the said projection.

The cap of the invention can be made of thin-gauge material which contributes to a reduction in material costs.

It might be assumed that a cap formed with such a weakening might tear along a row of perforations when it is being shrunk onto the bottle neck. Surprisingly, however, it has been found that in contrast to rolling-on a cap, the shrinking-on process can be such that the cap of the invention can reliably withstand the shrinking-on without splitting. It is believed that this is attributable to the fact that the row or rows of perforations in practice, ends or end below the projection and above the bottom edge of the cap.

Two embodiments of the invention will now be described by way of example with

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reference to the accompanying drawing, in which:—

Figure 1 is an elevation of a bottle cap shrunk onto a bottle neck having an axially extending line of perforations;

Figure 2 is the same as Figure 1 but showing the line deformed to a split; and

Figure 3 is an elevation of a bottle cap with a plurality of axial lines of perforations.

Referring to Figure 1, a plastics cap 2 is shrunk on to a bottle neck 1 over a circumferential, outward projection 4. The cap has an axial row of perforations 3 the lower end of which terminates at a distance *a* from the lower edge of the cap, and the upper end of which terminates at a distance *b* from the lower circumferential termination of the projection 4, that is, with the cap in position on the bottle neck. In other words, the upper termination of the row of perforations 3 is at a distance from the top of the cap such that in use in position on a bottle neck, the upper termination is at the distance *b* below the lower limit of the projection 4. With this arrangement, when the cap is being shrunk on, it does not split at its lower edge.

Referring to Figure 2, if an attempt is made to remove the cap improperly or if it is pushed upward in the direction of the arrow 5, the cap splits along the row of perforations, as indicated at 6, when the perforations pass over the projection 4. If the cap is pushed up beyond the Figure 2 position, it tears along the line of weakness of the row of perforations so that the lower edge of the cap becomes torn and the cap cannot be replaced.

Even if the cap 2 is pushed back down from the Figure 2 position, the tear 6 will, as a result of the elongation of the plastics material, remain sufficiently open that closure, for example by heating if the material is a thermoplastics material, is no longer possible.

Referring to Figure 3, another embodiment is shown. A bottle cap 7 has a plurality of rows of perforations 8 which extend axially and parallel and close to one another. In this embodiment, the cap 7 would split simultaneously in several places upon any attempt at removal.

It is also possible to provide two rows of axially extending perforations which are

disposed diametrically opposite each other in the cap, or to provide a plurality of axially extending rows of perforations spaced apart around the periphery of the cap at substantially equal distances.

The cap of the invention may be designed for use with other kinds of bottle. It is possible for example to seal a bottle, which has a crown cork closure or a screwed stopper, in which the projection 4 shown in Figure 1 is not present, since the skirt of the crown cork closure or screwed stopper fulfils the same purpose as the projection 4, in that it is a circumferential, outward projection.

WHAT WE CLAIM IS:—

1. A bottle cap of shrinkable plastics material, for shrinking onto a bottle neck over a circumferential, outward projection (for example a projection portion of the neck or of a crown cork closure or of a screwed stopper), wherein the cap has one or more than one substantially axially extending row of perforations, the lower end of the or each row terminating at a distance above the lower edge of the cap and the upper end of the or each row terminating at a distance below the top of the cap, which distances are such that the cap can be shrunk on the bottle neck without the cap splitting along the, or any, row of perforations, and the cap splits along at least one row when the shrunk-on cap is moved upwardly over the said projection.

2. A cap according to claim 1 having a plurality of rows.

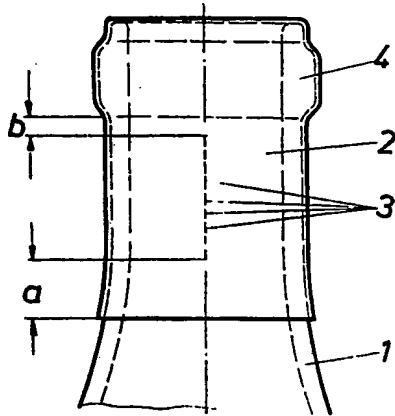
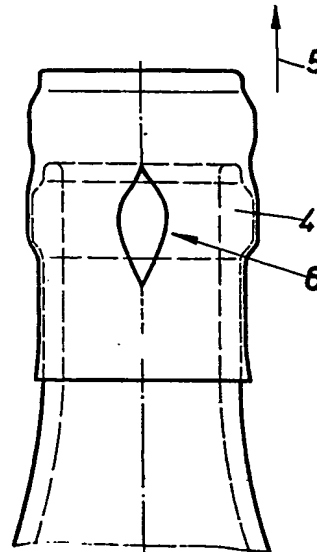
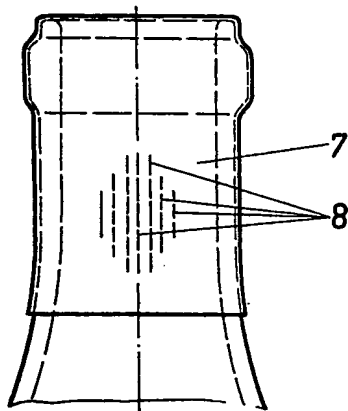
3. A cap according to claim 2 having two rows disposed diametrically opposite each other.

4. A cap according to claim 2, wherein the rows are spaced apart around the periphery of the cap at substantially equal distances.

5. A cap according to any preceding claims made of thermoplastics material.

6. A bottle cap constructed and arranged substantially as herein described and shown in the accompanying drawing.

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Fig. 1Fig. 2Fig. 3**BEST AVAILABLE COPY**